

Chemical Compounds in Cells Notes Review

Name: _____ Date: _____

Table: _____ Section: _____

- 1) How is a compound different from an element?

- 2) A molecule of ammonia consists of one atom of nitrogen and three atoms of hydrogen. Is ammonia an element or a compound? Explain your answer.

- 3) What are four types of organic molecules found in living things?

- 4) An organic compound contains only the elements carbon, hydrogen, and oxygen. Could this compound be a carbohydrate or a protein? Explain your answer.

- 5) What three important functions does water perform for the cell?

Performance Task: Amino Acids and Proteins

Though there are only 20 common amino acids, they can be combined in different ways to produce thousands of unique proteins. Proteins that differ in the order or type of amino acids they contain may have very different structures and functions. In fact, a change in even a single amino acid can sometimes affect the way a protein works.

Suppose that proteins could consist of just two amino acids. To see how many unique proteins, each composed of just two amino acids, can be formed from five different amino acids, fill in the spaces in the table below. Some of the spaces have been filled in to show you how. Assume that each letter represents a different amino acid.

<i>Amino Acids</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>
<i>A</i>	<i>AA</i>	<i>AB</i>	<i>AC</i>		
<i>B</i>	<i>BA</i>				
<i>C</i>					
<i>D</i>					
<i>E</i>					

Answer the following questions using the data from the table.

1. What does each letter pair in the table represent?
2. Based on your completed table, how many unique proteins, each composed of just two amino acids, can be formed from five different amino acids?
3. How many unique proteins, each made up of just two amino acids, could be formed from six different amino acids? From 20 different amino acids?
4. Most proteins are made up of not just two, but hundreds or even thousands of amino acids. How does this affect the number of unique proteins that could be formed from just a few amino acids?